

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 4, 2010 has been entered.

Response to Amendment

2. This Office action has been issued in response to Applicant's Amendment filed February 4, 2010. Claims 2-3, 5-6 and 13-24 have been cancelled. Claims 1, 4, and 7-12 remain pending in the application. Claim 1 has been amended.

Response to Arguments

3. Applicant's arguments with respect to the rejection of claims 1, 4, and 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0143960 to Goren et al (Goren hereinafter) in view of US 7,095,740 to Jagannath et al (Jagannath hereinafter) have been considered but they are not persuasive. Applicant argues that Goren-Jagannath fails to disclose or suggest “**(c) generating subnetwork connections by connecting the branch connection points, the nodes and the links in such a manner that the subnetwork connections share no link, (d) generating the virtual ring network by connecting the subnetwork connections which pass through different links,**” as recited in claim 1. Examiner respectfully disagrees.

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Goren-Jagannath teaches generating private network connections, i.e. subnetwork connections (Goren, par. 24). More specifically, Goren-Jagannath clearly teaches and suggests generating network topologies where the clients are virtually connected to one another but not physically connected (Goren, fig. 8A, a virtual connection exists between 1 and 2 although 1 is not directly connected to 2; par. 156). Goren-Jagannath teaches and suggests the virtual generation of networks in various network topologies well known in the art (Goren, par. 155). Examiner maintains rejection.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 4, and 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0143960 to Goren et al (Goren hereinafter) in view of US 7,095,740 to Jagannath et al. (Jagannath hereinafter).

Regarding claim 1, Goren teaches **a network decomposition unit which decomposes said network into at least one core ring network and a plurality of branch networks interconnected with said core ring network** (Page 5, paragraph [0053]; Goren discloses the virtual network generation (VNG) system can partition, i.e. decompose, any backbone network infrastructure, i.e., network, into smaller private sub-networks, i.e. elements and network components.); **table management unit that comprises , a branch information table for managing information on structures of**

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said branch networks , a core information table for managing information on a structure of said core ring network, a connection information table for managing information on connections between the core ring network and the branch

networks, (pg. 2, par. [0013]; Goren discloses the VNG system includes a front-end interface for provisioning, management and control accessible by clients and at-least one back-end VNG application system having one or more VNG servers and databases.

Pg. 3, par. [0022]; Goren discloses a technique for establishing private network communities (PNCs) which includes forming a connection to a system database, which holds all information related to different users and networks it manages. Examiner interprets registration process of information, the subsequent processes that connect to the system database, and associated front-end, back-end, and other processes to inherently involve management of network information in a database in some type of tabular information format. Pg. 10, par. [0156]; Goren further discloses that the virtual network generation (VNG) server handles the network information table updates. This further supports the inherency of network information being managed using an information table in the reference.) **a protection information table for containing**

information on protection of channels between nodes in the core ring network

(Pg. 10, par. [0156]; Goren discloses that the VNG server handles the network information table updates.), **and a virtual-network generation unit which generates a virtual ring network as a new ring network area to be managed, by combining said branch networks based on information managed by said table management unit** (pg. 2, par. [0011]; Goren discloses the present invention is a virtual network

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generation (VNG) system and method for establishing and managing private network communities (PNCs), i.e. network components, including, potentially, a plurality of isolated and geographically dispersed electronic devices (or "clients") coupled together over extended and potentially disparate communication links.); **said virtual-network generation unit, performing: (a1) checking that designated branch networks are connected to the identical core ring network, where the designated branch networks are branch networks designated by operator** (Pg. 5, par. [0053]; Goren discloses the virtual network generation (VNG) system can partition, i.e. decompose, any backbone network infrastructure, i.e., core or branch network, into smaller private sub-networks, i.e. network components.), **(a2) checking that link bandwidths of the designated branch networks do not exceed the value of a link bandwidth of the core ring network, (b1) obtaining branch connection points of the designated branch networks from the branch information table** (pg. 2, par. [0013]; Goren discloses the VNG system includes a front-end interface for provisioning, management and control accessible by clients and at-least one back-end VNG application system having one or more VNG servers and databases. Pg. 3, par. [0022]; Goren discloses a technique for establishing private network communities (PNCs) which includes forming a connection to a system database, which holds all information related to different users and networks it manages. Examiner interprets registration process of information, the subsequent processes that connect to the system database, and associated front-end, back-end, and other processes to inherently involve management of network information in a database in some type of tabular information format. Pg. 10, par.

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[0156]; Goren further discloses that the virtual network generation (VNG) server handles the network information table updates. This further supports the inherency of network information being managed using an information table in the reference.), **(b2) obtaining nodes having the branch connection points in the core ring network from the connection information table** (Pg. 5, par. [0053]; Goren discloses the virtual network generation (VNG) system can partition, i.e. decompose, any backbone network infrastructure, i.e., core or branch network, into smaller private sub-networks, i.e. network components; the VNG system can segment large network infrastructures into smaller, secure, centrally governed and automatically managed sub-networks, i.e., automatically generated virtual networks which are combinations of smaller branch networks.), **(b3) obtaining links from the core information table, where the links are physical transmission lines connecting the nodes** (Goren, pg. 3, par. [0018]; invention can be used over existing communication structures including power-lines and cable networks, i.e. network nodes connected by transmission lines), **(c) generating subnetwork connections by connecting the branch connection points, the nodes and the links** (pg. 2, par. [0011]; Goren discloses the present invention is a virtual network generation (VNG) system and method for establishing and managing private network communities (PNCs), i.e. network components, including, potentially, a plurality of isolated and geographically dispersed electronic devices (or "clients") coupled together over extended and potentially disparate communication links.) **in such a manner that the subnetwork connections share no link** (Pg. 2, par. [0011]; Goren discloses a virtual network generation (VNG) system and method for establishing and

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managing private network communities (PNCs), i.e. subnetwork connections. Goren further discloses, PNCs may be selectively assembled, disassembled, reassembled, joined, and disjoined, i.e. removed.; Goren, fig. 8A, a virtual connection exists between 1 and 2 although 1 is not directly connected to 2; par. 156, 24), **(d) generating the virtual ring network by connecting the subnetwork connections which pass through different links** (Pg. 3, par. [0018]; Goren discloses In accordance with the present invention, a method of establishing one or more private network communities (PNC) among isolated and geographically dispersed electronic devices over existing communication infrastructure is provided. Subsequently, creation of a PNC is based on a list of addresses representing all clients in the workgroup; the PNC workgroup membership may be a function of a set of tasks to be accomplished. In the preferred embodiment, the PNCs include sets of server-managed tunnels encapsulating data within special communication protocol packets to transport information that does not otherwise conform to any public network addressing standards. The end result is that all users, i.e., clients connected to the network, become virtual nodes relating to different dynamic communities that they created or of which they are members as branches.).

Although Goren discloses a network information table (Goren; Pg. 10, par. [0156]), Goren does not expressly disclose the specific type of table described in the limitations **wherein said table management unit comprises, a branch information table for managing table for managing information on structures of said branch networks , a core information table for managing information on at least one**

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structure of said at least one core network, a connection information table for managing information on connections between the at least one core network and the branch networks. Goren also fails to disclose **link bandwidths of the designated branch networks do not exceed the value of a link bandwidth of the core network.** Goren also fails to explicitly disclose **wherein, when a working path is established between the nodes in the core ring network and when there are a plurality of channels between the nodes, said virtual-network generation unit generates the subnetwork connections by preferentially selecting ones of the channels that are not protected in order to avoid double protection by a protection path, based on the protection information table; and a virtual-network display unit that displays the virtual ring network to be a managed area by concealing the nodes constituting the core ring network.**

Jagannath discloses a method and apparatus for directing messages through a network **wherein said table management unit comprises, a branch information table for managing information on structures of said branch networks** (Col 1, lines 55-67; Jagannath discloses a method and apparatus for directing messages through a network wherein multiple tables for directing messages through the network are maintained and provided. Each table corresponds to a virtual private network and contains routing information specific to that virtual private network. A separate routing table is maintained for each VPN.), **a core information table for managing information on at least one structure of said at least one core network** (Col 1, lines 55-67; Jagannath discloses each table corresponds to a virtual private network

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and contains routing information specific to that virtual private network. A separate routing table is maintained for each VPN.), **a connection information table for managing information on connections between the at least one core network and the branch networks** (Col 1, lines 55-67; Jagannath discloses in one embodiment the messages are forwarded using plain IP forwarding using a route table associated with the VPN. In another embodiment separate forwarding tables using labels are generated for each virtual private network. The messages are forwarded by looking up the label in the table corresponding to the VPN. In a third embodiment, a single forwarding table is utilized where the table is built based on separate routing tables for each virtual private network.), **and a virtual-network information table for managing information on a structure of said virtual network after generation of the virtual network** (Col 1, lines 55-67; Jagannath discloses the messages are forwarded by looking up the label in the table corresponding to the VPN. In a third embodiment, a single forwarding table is utilized where the table is built based on separate routing tables for each virtual private network.). Jagannath discloses **link bandwidths of the designated branch networks do not exceed the value of a link bandwidth of the core network** (Jagannath, col. 2, lines 51 – col. 3, line 8).

Jagannath also discloses a method and apparatus for directing messages through a network **wherein, when a working path is established between the nodes in the core network and when there are a plurality of channels between the nodes**, (col. 3, lines 27-39; Jagannath teaches a means that determines which links and nodes are in a given VPN, assigns different administrative weights to different

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VPN links, and completely isolates traffic of one VPN from another.) **said virtual-network generation unit generates the subnetwork connections by preferentially selecting ones of the channels that are not protected in order to avoid double protection by a protection path, based on the protection information table** (col. 3, lines 27-39; Jagannath teaches a means that determines which links and nodes are in a given VPN, assigns different administrative weights to different VPN links, and completely isolates traffic of one VPN from another.); **and a virtual-network display unit that displays the virtual ring network to be a managed area by concealing the nodes constituting the core ring network** (Jagannath teaches a means that determines which links and nodes are in a given VPN, assigns different administrative weights to different VPN links, and completely isolates traffic of one VPN from another (col. 3, lines 27-39). Examiner interprets this which means isolates traffic of one VPN from another and determines which links and nodes are in a given VPN to be functionally equivalent to selecting channels that are not protected (due to there being isolated from the other traffic) and subsequently avoid double protection when creating a working virtual path between nodes (again due to there being isolated from the other traffic)).

Goren and Jagannath are analogous art because they are from the same field of endeavor of network management relating to virtual networks. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use Jagannath's virtual private network routing tables for managing information on the structures of the branch networks, core network, core/branch connections, and the

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creation and managing of the virtual private networks in Goren's virtual network generation system as the use of routing tables to manage this type of network information was commonly known at the time of the invention. It would also have been obvious to a person of ordinary skill in the art to use Jagannath's bandwidth provisioning within the virtual private network with Goren's virtual network generation system as provisioning specific bandwidths over a virtual private network per Jagannath was known at the time of the invention. The suggestion/motivation would have been to provide more fine-grained control over the routed topology for individual virtual private networks (column 1, lines 51-52).

Regarding claim 4, Goren-Jagannath discloses the invention substantially as described in claim 1 above including, **wherein said branch information table stores branch numbers indicating said branch networks** (Pg. 5, par. [0055]; Goren discloses a system database for holding system information, such as all user, workgroup, and network attributes, general control information, log data, and billing information. Goren further discloses that in the inventions preferred form, the data storage device also includes the central data behind all the private network communities (PNC) server's operational logic, serving as the data repository for all of the PNC server building blocks (e.g. the provisioning web server device, the data packet switch server device and the data access and security management service), **and said virtual-network generation unit automatically generates said virtual network by combining said ones of the branch networks when ones of the branch numbers corresponding to the ones of the branch networks are**

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externally designated (pg. 2, par. [0018]; Goren discloses, a virtual network generation system by which the PNCs become virtual nodes relating, i.e., corresponding to different dynamic communities that they created or of which they are members, i.e. designated.).

Although Goren discloses a network information table (Goren; Pg. 10, par. [0156]), he does not expressly disclose the specific type of table described in the limitation **wherein said branch information table stores branch numbers indicating said branch networks**. Jagannath discloses a method and apparatus for directing messages through a network **wherein said branch information table stores branch numbers indicating said branch networks** (Col 1, lines 55-67; Jagannath discloses each table corresponds to a virtual private network and contains routing information specific to that virtual private network. A separate routing table is maintained for each VPN.).

Regarding claim 7, Goren-Jagannath discloses the invention substantially as described in claim 1 above including, **wherein when a branch network is added to said virtual network** (Pg. 2, par. [0011]; Goren discloses a virtual network generation (VNG) system and method for establishing and managing private network communities (PNCs), i.e. subnetwork connections. Goren further discloses, PNCs may be selectively assembled, disassembled, reassembled, joined, i.e. added, and disjointed.) **said virtual-network generation unit changes a structure of the virtual network by determining at least one path in the virtual network which is affected by addition of the branch network** (Pg. 3, par. [0018]; Goren discloses In accordance with the

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present invention, a method of establishing one or more private network communities (PNC) among isolated and geographically dispersed electronic devices over existing communication infrastructure is provided. Subsequently, creation of a PNC is based on a list of addresses representing all clients in the workgroup; the PNC workgroup membership may be a function of a set of tasks to be accomplished. In the preferred embodiment, the PNCs include sets of server-managed tunnels encapsulating data within special communication protocol packets to transport information that does not otherwise conform to any public network addressing standards. The end result is that all users, i.e., clients connected to the network, become virtual nodes relating to different dynamic communities that they created or of which they are members as branches.), **switching said at least one path to at least one other path, changing subnetwork connections in one of said at least one core network after the switching** (Goren, Pg. 2, par. [0017]; The core functionality hosted by the VNG server(s) may include several modules necessary for establishing and managing each PNC, authenticating users, managing security keys, switching/routing PNC traffic, terminating PNCs, logging usage, and (optionally) billing users. As will be appreciated by those skilled in the art, the foregoing functionality may be distributed among a variety of types of resources and the managers identified herein are merely used for illustrative purposes.), **and thereafter making settings for connecting paths to nodes in the added branch network** (Pg. 5, par. [0053]; Goren discloses the virtual network generation (VNG) system can partition, i.e. decompose, any backbone

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network infrastructure, i.e., core or branch network, into smaller private sub-networks, i.e. network components.).

Regarding claim 8, Goren-Jagannath discloses the invention substantially as described in claim 1 above including, **wherein when a branch network is removed from said virtual network** (Pg. 2, par. [0011]; Goren discloses a virtual network generation (VNG) system and method for establishing and managing private network communities (PNCs), i.e. subnetwork connections. Goren further discloses, PNCs may be selectively assembled, disassembled, reassembled, joined, and disjoined, i.e. removed.), **said virtual-network generation unit changes a structure of the virtual network by determining at least one path in the virtual network which is affected by removal of the branch network** (Pg. 3, par. [0018]; Goren discloses In accordance with the present invention, a method of establishing one or more private network communities (PNC) among isolated and geographically dispersed electronic devices over existing communication infrastructure is provided. Subsequently, creation of a PNC is based on a list of addresses representing all clients in the workgroup; the PNC workgroup membership may be a function of a set of tasks to be accomplished. In the preferred embodiment, the PNCs include sets of server-managed tunnels encapsulating data within special communication protocol packets to transport information that does not otherwise conform to any public network addressing standards. The end result is that all users, i.e., clients connected to the network, become virtual nodes relating to different dynamic communities that they created or of which they are members as branches.), **switching said at least one path to at least**

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one other path, changing subnetwork connections in one of said at least one core network after the switching (Pg. 2, par. [0017]; The core functionality hosted by the VNG server(s) may include several modules necessary for establishing and managing each PNC, authenticating users, managing security keys, switching/routing PNC traffic, terminating PNCs, logging usage, and (optionally) billing users. As will be appreciated by those skilled in the art, the foregoing functionality may be distributed among a variety of types of resources and the managers identified herein are merely used for illustrative purposes.), **and thereafter removing subnetwork connections related to said at least one path from nodes in the removed branch network** (Pg. 2, par. [0011]; Goren discloses a virtual network generation (VNG) system and method for establishing and managing private network communities (PNCs), i.e. subnetwork connections. Goren further discloses, PNCs may be selectively assembled, disassembled, reassembled, joined, and disjointed, i.e. removed.).

Regarding claim 9, Goren-Jagannath discloses the invention substantially as described in claim 1 above including, **wherein when a node is added to a branch network in said virtual network** (Pg. 2, par. [0011]; Goren discloses a virtual network generation (VNG) system and method for establishing and managing private network communities (PNCs), i.e. node. Goren further discloses, PNCs may be selectively assembled, disassembled, reassembled, joined, i.e. added, and disjointed.), **said virtual-network generation unit changes a structure of the virtual network by determining at least one path in the virtual network which is affected by addition of the node** (Pg. 3, par. [0018]; Goren discloses In accordance with the present

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invention, a method of establishing one or more private network communities (PNC) among isolated and geographically dispersed electronic devices over existing communication infrastructure is provided. Subsequently, creation of a PNC is based on a list of addresses representing all clients in the workgroup; the PNC workgroup membership may be a function of a set of tasks to be accomplished. In the preferred embodiment, the PNCs include sets of server-managed tunnels encapsulating data within special communication protocol packets to transport information that does not otherwise conform to any public network addressing standards. The end result is that all users, i.e., clients connected to the network, become virtual nodes relating to different dynamic communities that they created or of which they are members as branches.), **switching said at least one path to at least one other path** (Pg. 2, par. [0017]; The core functionality hosted by the VNG server(s) may include several modules necessary for establishing and managing each PNC, authenticating users, managing security keys, switching/routing PNC traffic, terminating PNCs, logging usage, and (optionally) billing users. As will be appreciated by those skilled in the art, the foregoing functionality may be distributed among a variety of types of resources and the managers identified herein are merely used for illustrative purposes.), **thereafter making settings for connecting paths to the added node** (Col 1, lines 55-67; Goren discloses electronic devices connected to the dynamic private network become virtual nodes relating to different PNCs.), **and adding information on the added node to said branch information table** (Pg. 10, par. [0156]; Goren discloses that the VNG server handles the network information table updates.) Although Goren

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discloses a network information table (Goren; Pg. 10, par. [0156]), he does not expressly disclose the specific type of table described in the limitation **and adding information on the added node to said branch information table**. Jagannath discloses a method and apparatus for directing messages through a network **and adding information on the added node to said branch information table** (Col 1, lines 55-67; Jagannath discloses each table corresponds to a virtual private network and contains routing information specific to that virtual private network. A separate routing table is maintained for each VPN. For other limitations, please refer to the previously noted citations to Goren above).

Regarding claim 10, Goren-Jagannath discloses the invention substantially as described in claim 1 above including, **wherein when a node is removed from a branch network in said virtual network** (Pg. 2, par. [0011]; Goren discloses a virtual network generation (VNG) system and method for establishing and managing private network communities (PNCs), i.e. node. Goren further discloses, PNCs may be selectively assembled, disassembled, reassembled, joined, and disjoined, i.e. removed.), **said virtual-network generation unit changes a structure of the virtual network by determining at least one path in the virtual network which is affected by removal of the node** (Pg. 3, par. [0018]; Goren discloses In accordance with the present invention, a method of establishing one or more private network communities (PNC) among isolated and geographically dispersed electronic devices over existing communication infrastructure is provided. Subsequently, creation of a PNC is based on a list of addresses representing all clients in the workgroup; the PNC workgroup

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membership may be a function of a set of tasks to be accomplished. In the preferred embodiment, the PNCs include sets of server-managed tunnels encapsulating data within special communication protocol packets to transport information that does not otherwise conform to any public network addressing standards. The end result is that all users, i.e., clients connected to the network, become virtual nodes relating to different dynamic communities that they created or of which they are members as branches.), **switching said at least one path to at least one other path** (Pg. 2, par. [0017]; The core functionality hosted by the VNG server(s) may include several modules necessary for establishing and managing each PNC, authenticating users, managing security keys, switching/routing PNC traffic, terminating PNCs, logging usage, and (optionally) billing users. As will be appreciated by those skilled in the art, the foregoing functionality may be distributed among a variety of types of resources and the managers identified herein are merely used for illustrative purposes.), **and thereafter removing information on the removed node from said branch information table** (Pg. 2, par. [0011]; Goren discloses a virtual network generation (VNG) system and method for establishing and managing private network communities (PNCs), i.e. node. Goren further discloses, PNCs may be selectively assembled, disassembled, reassembled, joined, and disjointed, i.e. removed. Pg. 10, par. [0156]; Goren discloses that the VNG server handles the network information table updates). Although Goren discloses a network information table Pg. 10, par. [0156], he does not expressly disclose the specific type of table described in the limitation, **and thereafter removing information on the removed node from said branch information table.**

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Jagannath discloses a method and apparatus for directing messages through a network **wherein when a node is removed from a branch network in said virtual network, said virtual-network generation unit changes a structure of the virtual network by determining at least one path in the virtual network which is affected by removal of the node, switching said at least one path to at least one other path, and thereafter removing information on the removed node from said branch information table** (Col 1, lines 55-67; Jagannath discloses each table corresponds to a virtual private network and contains routing information specific to that virtual private network. A separate routing table is maintained for each VPN preserving the virtual path for the virtually connected nodes. For other limitations, please refer to the previously noted citations to Goren above).

Regarding claim 11, Goren-Jagannath discloses the invention substantially as described in claim 1 above including, **further comprising a virtual-network display unit which displays said virtual network by generating virtual lines based on connections between nodes in said ones of branch networks and subnetwork connections in one of said at least one core network which connect the ones of branch networks** (Pg. 6, par. [0100]; Goren discloses a client-based Graphical User Interface (GUI) browser interface module, i.e. display unit, responsible for facilitating all user-level command and control interactions with the VNG web server including set-up, manage, logon/off, register, monitor, change attributes, invite new workgroup members, access to PNC functionality, thereby enabling browser-based user

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registration, private network communities (PNC) creation, management, monitoring, log viewing and (optionally) billing.).

Regarding claim 12, Goren-Jagannath discloses the invention substantially as described in claim 11 above including, **wherein when a trouble occurs in a link, and a failure of a subnetwork connection is detected** (Pg. 10, par. [0154]; Goren discloses upon some termination event, e.g., completion of tasks, time out, i.e. failure of a subnetwork connection, security violation, and so on, disassembly of the PNC, i.e. subnetwork connection, occurs), **said virtual-network display unit displays information on the failure with one of said virtual lines corresponding to the subnetwork connection** (Pg. 6, par. [0100]; Goren discloses a client-based Graphical User Interface (GUI) browser interface module, i.e. display unit, responsible for facilitating all user-level command and control interactions with the VNG web server including set-up, manage, logon/off, register, monitor, change attributes, invite new workgroup members, access to PNC functionality, thereby enabling browser-based user registration, private network communities (PNC) creation, management, monitoring, log viewing and (optionally) billing.).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,549,533 to Campbell; US 2002/0018473 to Hassell et al (par. 45); US 2004/0151181 to Chu et al; US 2002/0181392 to Okuno.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TARIQ S. NAJEE-ULLAH whose telephone number is

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(571)270-5013. The examiner can normally be reached on Monday through Thursday 8:00 - 6:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Thomas can be reached on (571) 272-6776. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/THUHA T. NGUYEN/
Primary Examiner, Art Unit 2453

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Examiner, Art Unit 2453
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